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IS 3124 (2006): Terpineol [PCD 18: Natural and Synthetic Fragrance Materials]

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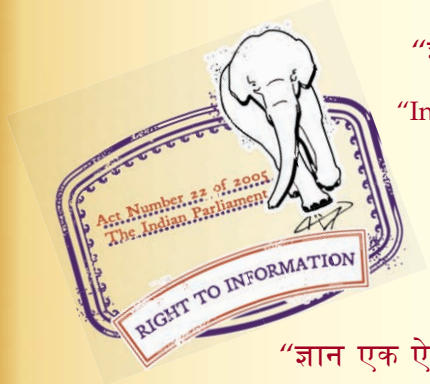

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"Knowledge is such a treasure which cannot be stolen"

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भारतीय मानक

टरपीनओल — विशिष्टि

(तीसरा पुनरीक्षण)

Indian Standard

TERPINEOL — SPECIFICATION

(Third Revision)

ICS 71.100.60

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

December 2006

Price Group 2

FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Natural and Synthetic Fragrance Materials Sectional Committee had been approved by the Petroleum, Coal and Related Products Division Council.

This standard was first issued in 1965 and subsequently revised in 1975 and 1992. In the first revision, when the maximum limit of distillation range was changed, the congealing point was deleted and the method for the determination of total alcohols was substituted by the Fiore's method. A new requirement for alpha terpineol content was also added.

In the second revision GLC method for determination of alpha terpineol and other terpineols were included in place of the Fiore's method for determination of total terpene alcohols which is very time consuming. Requirement limit for alpha terpineol content was raised from 82 percent to 88 percent. Besides, procedure for distillation range was modified.

In this revision, physico-chemical requirements have been prescribed at 20°C in addition to 27°C. Besides, new requirement for acid value has been included.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

TERPINEOL — SPECIFICATION

(Third Revision)

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for terpineol.

2 REFERENCES

The following standards contain provisions, which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS No.	*Title*
326	Methods of sampling and test for natural and synthetic perfumery materials:
(Part 1) : 1984	Sampling (*second revision*)
(Part 2) : 1980	Preliminary examination of perfumery materials and samples (*second revision*)
(Part 3) : 2006/ ISO 279 : 1998	Determination of relative density (*third revision*)
(Part 5) : 2006/ ISO 280 : 1998	Determination of refractive index (*third revision*)
(Part 6) : 2005/ ISO 875 : 1999	Determination of solubility in ethanol (*third revision*)
(Part 7) : 2006/ ISO 1242 : 1999	Determination of acid value (*third revision*)
(Part 19) : 1998	Gas chromatographic analysis of perfumery materials
(Part 20) : 1993	Determination of boiling (distillation) range
1070 : 1992	Reagent grade water (*third revision*)
2284 : 1988	Method for olfactory assessment of natural and synthetic perfumery materials (*first revision*)
6597 : 2001	Glossary of terms relating to fragrance and flavour industry (*second revision*)

3 TERMINOLOGY

For the purpose of this standard, definitions given IS 6597 shall apply.

4 REQUIREMENTS

4.1 Description

4.1.1 The material shall be a clear and colourless liquid, free from sediment, suspended matter, adulterants and unreacted pinene fractions.

4.1.2 The material shall be examined for its colour, clarity, suspended matter and sediment as prescribed in IS 326 (Part 2).

4.2 Solubility

The material shall be soluble in two and more volumes of ethyl alcohol (70 percent by volume) when tested as prescribed in IS 326 (Part 6).

4.3 The material shall also comply with the requirements given in Table 1.

5 PACKING AND MARKING

5.1 Packing

The material shall be supplied in air-tight well closed containers, preferably amber coloured glass, aluminum or galvanized iron containers permitting a minimum of air space, as agreed to between the purchaser and the supplier. The material shall be well-protected from light and stored in a cool place.

5.2 Marking

The material shall be marked with the following information:

a) Name of the material;

b) Indication of the source of manufacture;

c) Net mass of material;

d) Batch number and date of manufacture; and

e) Containers may also be marked with Standard Mark.

5.2.1 *BIS Certification Marking*

The containers may also be marked with the Standard Mark.

5.2.1.1 The use of the Standard Mark is governed by the provisions of the the *Bureau of Indian Standards Act,*

1986 and the Rules and Regulations made thereunder. The details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers, may be obtained from the Bureau of Indian Standards.

6 SAMPLING

6.1 Representative samples of the material shall be drawn as prescribed in IS 326 (Part 1).

6.2 Number of Tests

6.2.1 Tests for the determination of distillation range and total alcohols shall be conducted on each of the individual samples.

6.2.2 Tests for the determination of remaining characteristics shall be conducted on the composite sample.

7 TESTS

7.1 Tests shall be conducted as prescribed in **4.1** to **4.3** and in col 4 of Table 1.

7.2 Quality of Reagents

Unless otherwise specified, pure chemicals and distilled water (*see* IS 1070) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

Table 1 Requirements of Terpineol
(*Clauses* 4.3 *and* 7.2)

Sl No.	Characteristic	Requirement	Method of Test, Ref to	
			IS No.	Annex
(1)	(2)	(3)	(4)	(5)
i)	Odour	Soft, fresh, sweet floral odour reminiscent of white lilac, free from objectionable by-odours, such as piney camphoraceous, terpenic, etc	2284	—
ii)	Relative density[1)]			
	at 20°C	0.930 0 to 0.938 0	326 (Part 3)	—
	at 27°C	0.927 0 to 0.932 0		
iii)	Refractive index[1)]			
	at 20°C	1.481 0 to 1.486 0	326 (Part 5)	—
	at 27°C	1.480 0 to 1.483 0		
iv)	Distillation range:			
	a) Initial boiler point (IBP) °C, *Min*	214	326 (Part 20)	—
	b) 95 ml of distillate, *Max* up to, °C	222		
v)	Avid value, *Max*	0.5	326 (Part 7)	—
vi)	Total terpineols:			A
	a) Content, percent by GC, *Min*	98		
	b) Alpha-terpineol content, percent by GC, *Min*	88		

NOTE — Flash point of terpineol is 91°C.

[1)] The correction factors for relative density and refractive index for each degree Celsius change in temperature are 0.000 64 and 0.000 38.

ANNEX A

[*Table* 1, *Sl No.* (vi)]

GAS CHROMATOGRAPHIC ANALYSIS OF TERPINEOL

A-1 GENERAL

The chromatographic conditions given here are for guidance only.

A-2 OUTLINE OF THE METHOD

A sample of the material is injected into the gas chromatograph where it is carried by the carrier gas from one end of the column to the other. During its movement, the constituents of the sample undergo distribution at different rates and ultimately get separated from one another. The separated constituents emerge from the end of the column one after another and are detected by suitable means whose response is related to the amount of a specific component leaving the column. The detector signals, on transmission to the recorder plots the chart. From the specific area under various peaks corresponding to the specific constituents, the quantities of different constituents are determined [*see* IS 326 (Part 19)].

A-3 APPARATUS

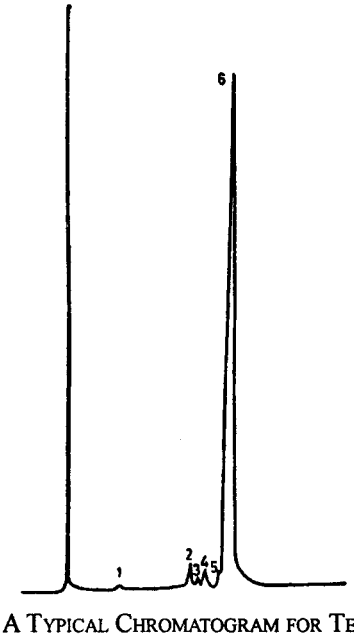
Any suitable gas chromatograph and column capable of being operated under conditions suitable for resolving the individual constituents into distinct peaks may be used. The typical chromatogram terpineol with the following chromatographic conditions is shown in Fig. 1.

A-4 CALCULATION

Peak areas are calculated either by the most commonly used triangular method or automated integration. When an electronic integrator is used, concentrations of the constituents on the basis of the peak areas on chromatogram are automatically calculated and presented as a printout. For specific constituents, internal standard method is employed for higher accuracy.

	Sample	*Oil of Turpentine*
a)	*Column:*	
	Material	Stainless steel
	Length	3 m
	Orifice	0.32 cm
	Stationary phase and solid support	FFAP[1)], 10 percent by mass on chromosorb mesh WHP 100 – 120.
b)	Carrier gas	Nitrogen
	Flow rate	20 ml/min
c)	*Conditions:*	
	Column temperature	140°C
	Injection port temperature	230°C
d)	*Detector:*	
	Type	FID
	Temperature	250°C

[1)]Free fatty acid phase (FFAP) in carbowax 20 M treated with nitrophthalic acid.



1 MENTHADIENES
2 TERPINENE-1-OL
3 TERPINENE-4-OL
4 TRANS-BETA TERPINEOL
5 CIS-BETA TERPINEOL
6 ALPHA TERPINEOL

FIG. 1 A TYPICAL CHROMATOGRAM FOR TERPINEOL

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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